

MASTER OF VOCATION
Robotics and Automation
Subject: Advance Robotics
Subject Code: RA-901
Semester: Third
January 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number											

SECTION -A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. What are state variables?
- B. What does PID do?
- C. Robot vision is based on which principle?
- D. Name the basic unit of a robot which can be programmed to give instructions to the robot?
- E. AML is designed by_____.
- F. Define robotic palletizing?
- G. What are the motion commands available in VAL programming?
- H. List out the few robot applications area in manufacturing?
- I. What do you mean by torque control?
- J. How do robots sensors transmit information?

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Discuss the applications of robots in industries.
2. Describe the classification of sensors and factors to be considered for its selection.
3. Write a Val program to perform pick and place operation on the conveyor system. It consists of two conveyors running parallel with center distance of 600mm at same level. An industrial robot is fixed centrally between the conveyors. The robot is used to transfer work pieces from conveyor 1 to 2 at a constant speed. Draw a schematic view of the system. Assume all necessary dimensions.
4. Describe the concepts of safety in robotics.
5. Discuss the following categories of program instructions in Val robot programming.
 - i. Robot configuration control
 - ii. Motion control
6. Define robot vision and describe the architecture of robot vision system.
7. What is AML language? Explain its elements with their functions.
8. Describe the feedback components used in robotics.

*****END OF PAPER*****